UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF CALIFORNIA

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CHIRON CORPORATION

Plaintiff,

v.

GENENTECH, INC.

Defendant.

NO. CIV. S-00-1252 WBS GGH

MEMORANDUM AND ORDER RE: PRIORITY, ANTICIPATION, WRITTEN DESCRIPTION, ENABLEMENT, BEST MODE, UTILITY

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In a separate order, the court has determined that Genentech's product, Herceptin, infringes Chiron's U.S. Patent No. 6,054,561 ("'561 patent"). Chiron and Genentech now bring cross motions for summary judgment on Genentech's anticipation, written description and enablement defenses under 35 U.S.C. §§ 102, 112. These cross motions address the central question of whether the '561 patent is entitled to the benefit of the 1984, 1985, and/or 1986 filing dates of three patent applications in the '561 patent family. Chiron also moves for summary judgment on Genentech's best mode and utility defenses under 35 U.S.C. § 112.

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I. Factual and Procedural Background

On February 8, 1984, Chiron's predecessor in interest, Cetus, filed the first in what was to become a long line of patent applications that led to the issuance of the '561 patent. The 1984 application discusses monoclonal antibodies that bind to human breast cancer,[1] and identifies several such antibodies, including one known as 454 C11. The specification of the 1984 application describes how the antibodies were produced using the hybridoma method developed by Kohler and Millstein, and then screened for certain binding properties. As set forth in the 1984 application, the hybridomas that produce the claimed antibodies are on deposit with the American Type Culture Collection ("ATCC"), a cell and tissue bank accessible to the public. (See 1984 Application at 27.) In addition to discussing how the antibodies were made, the 1984 application proposes various uses for the antibodies. It states that the monoclonal antibodies of the invention can be used in cancer diagnosis and in immunoassays, and also discusses how the antibodies can be conjugated or joined with a toxin so that they can be used in cancer treatment to kill breast cancer cells. (Id. at 1, 9, 23-25.)

On January 11, 1985, Cetus filed a continuation-in-part of the 1984 application. In addition to 454 C11, the 1985 application describes and claims the monoclonal antibody 520 C9. (1995 Application at 32.) The specification of the 1985

[1] The science of monoclonal antibodies is set forth at length in this court's Markman Order of April 22, 2002.

application essentially tracks that of the 1984 application, but adds more information about the antigen to which the claimed antibodies bind. It notes that the antigen has an approximate molecular weight of approximately 210,000 daltons, and identifies seven monoclonal antibodies (including 454 C11 and 520 C9) that bind to that antigen. (Id. at 30.)

In 1986, Cetus filed another continuation application. The specification of the 1986 application is similar to the 1985 application, but it names a total of thirteen monoclonal antibodies that bind to the antigen of interest, and states that the molecular weight of the antigen is approximately 200,000 daltons. (1986 Application at 30.) The 1986 application also describes and claims other antibodies that bind to a "high molecular weight" antigen. (See id. at 36, claim 3.)

The inventors of these monoclonal antibodies, Cetus scientists Drs. David Ring and Arthur Frankel, dubbed the approximately 200,000 dalton antigen they discovered "BCA200" (i.e. "Breast Cancer Antigen 200"). In the late 1980s, Dr. Ring conducted a number of experiments comparing BCA200 to other antigens of similar molecular weight known in the art. One of these antigens was a 185,000 dalton antigen known as c-erbB-2 (later known as HER2).[2] Dr. Ring noted similarities betwen BCA200 and c-erbB-2, but concluded that BCA200 might be distinct from c-erbB-2, and published a paper to that effect in 1989. (Durie Decl. Ex. J.) Two years later, in 1991, Dr. Ring published another paper noting problems with the experiment

[2] The court uses c-erbB-2 and HER2 interchangeably to refer to the same breast cancer antigen.

discussed in the 1989 publication, and stating that new studies had shown that BCA200 was in fact the same antigen as c-erbB-2. (Durie Decl. Ex. F.)

In 1995, Chiron filed another continuation application that ultimately issued as the '561 patent. The '561 patent broadly claims all monoclonal antibodies that bind to c-erbB-2. Claims 1-8 and 20-25 of the '561 patent are directed toward monoclonal antibodies that "bind[] to a human breast cancer antigen that is also bound by monoclonal antibody 454 C11. . . ." (See e.g., id., claim 1). These claims rely on the 1984 parent application for priority. Claims 9-18 are directed toward monoclonal antibodies that "bind[] to a human breast cancer antigen that is also bound by monoclonal antibody 520 C9. . . ." (See e.g., id., claim 9). These claims assert priority based on the 1985 parent application. Claim 19 of the patent claims "a monoclonal antibody that binds to human c-erb-2 antigen," and relies on the 1984/1985 applications for priority. (Id., claim 19.) The specification of the '561 patent states that 454 C11 and 520 C9 bind to the same antigen, c-erbB-2. (Id. at 27:1-17.)

This court held a Markman Hearing and issued an order construing disputed terms in the '561 patent on April 22, 2002. As set forth in that order, the term "monoclonal antibody" as used in the patent means any homogeneous population of antibodies, and is not limited by the species or source of the antibody. (April 22, 2002 Order at 38.) Thus, the patent claims encompass monoclonal antibodies derived from hybridomas, as well as "altered," "hybrid," "chimeric," and "humanized" antibodies. (Id.) A hybridoma is an immortal cell line created by fusing a

B-lymphocyte cell with a myeloma cell, and is capable of producing monoclonal antibodies. (See id. at 3.) "Altered" antibodies include antibodies conjugated with toxins. (Mar. 6, 2002 Markman Tr. at 14). "Chimeric" antibodies are antibodies having a mouse or animal variable region (the region that includes the portion of the antibody that binds to the antigen), and a human constant region. (Id. at 36). A chimeric antibody is an example of a "hybrid" antibody. A "humanized" antibody is a genetically engineered antibody in which the amino acid sequences in the binding site of the antibody are modeled after animal antibodies while the rest is human.

II. Discussion

The court must grant summary judgment to a moving party "if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(c). The party adverse to a motion for summary judgment may not simply deny generally the pleadings of the movant; the adverse party must designate "specific facts showing that there is a genuine issue for trial." Fed. R. Civ. P. 56(e); see Celotex Corp. v. Catrett, 477 U.S. 317 (1986). Simply put, "a summary judgment motion cannot be defeated by relying solely on conclusory allegations unsupported by factual data." Taylor v. List, 880 F.2d 1040, 1045 (9th Cir. 1989). The non-moving party must show more than a mere "metaphysical doubt" as to the material facts. Matsushita Elec. Indus. Co. v. Zenith Radio, 475 U.S. 574, 587 (1986).

In addition, "the inquiry involved in a ruling on a motion for summary judgment . . . necessarily implicates the substantive evidentiary standard of proof that would apply at the trial on the merits." Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 252 (1986). An issued patent carries with it a presumption of validity, which can only be overcome by clear and convincing evidence to the contrary. Johns Hopkins v. CellPro, Inc., 152 F.3d 1342, 1359 (Fed. Cir. 1998); North Am. Vaccine, Inc. v. Am. Cyanamid, 7 F 3d. 1571, 1579 (Fed. Cir. 1992). The court must therefore take this standard into account when ruling on the motions for summary judgment regarding Genentech's invalidity defenses.

A patent is invalid if the invention it claims was "patented or described in a printed publication . . . more than one year prior to the date of the application for patent . . . ." 35 U.S.C. § 102 (b). In the ten year period between the filing of the 1985 application and the filing of the 1995 application, several patents and articles were published on anti-HER2 monoclonal antibodies. (Lam Decl. Ex. B (U.S. Patent No. 4,753,894, issued June, 1988); Ex. C (International Application Number PCT/US93/03080, filed April, 1993); Ex. D (Robert Hudziak, et al., p185HER2 Monoclonal Antibody Has Antiproliferative Effects In Vitro and Sensitizes Human Breast Cancer Tumor Cells to Tumor Necrosis Factor, 9 Molecular and Cellular Biology 1165-1172 (March 1989))). Chiron does not dispute that if the patent can only rely on the 1995 application for priority, these intervening references anticipate and therefore invalidate the patent. Accordingly, a threshold issue for the court is whether

the '561 patent is entitled to rely on the either the 1984, 1985, or 1986 application for priority.

For a patent to get the benefit of the filing date of an earlier application, the specification of the earlier application must meet the requirements of 35 U.S.C. § 112. See 35 U.S.C. § 120 ("An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States . . . shall have the same effect, as to such invention, as though filed on the date of the prior application. . . ."); Studiengesellschaft Kohle v. Shell Oil Co., 112 F.3d 1561, 1564 (Fed. Cir. 1997). Section 112 provides, in relevant part:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use the same, and shall set forth the best mode contemplated by the inventor for carrying out his invention.

35 U.S.C. § 112. Courts have interpreted this language to contain various requirements, including: (1) an "enablement" requirement; (2) a "written description" requirement; (3) a "usefulness" requirement; and (4) a "best mode" requirement. Genentech alleges that none of these requirements have been met in this case.

A. Enablement

Chiron and Genentech bring cross motions for summary judgment on the question of whether the parent applications enable the invention claimed in the '561 patent. "To be enabling, the specification must teach those skilled in the art

to make and use the full scope of the claimed invention without undue experimentation." Genentech, Inc. v. Novo Nordisk, 108 F.3d 1361, 1365 (Fed. Cir. 1997)(emphasis added). If the specification requires one of ordinary skill in the art to perform "undue experimentation" to practice the invention as broadly as it is claimed, the patent is invalid for lack of enablement. In re Wands, 858 F.2d 731, 737 (Fed. Cir. 1988). However, "[e]nablement is not precluded by the necessity for some experimentation such as routine screening," and "[a] patent need not disclose what is well known in the art." Id. at 737, 735.

Factors to consider in determining whether a disclosure requires undue experimentation include "(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims." Id.

Enablement is a question of law based on the factual determinations described above. Enzo, 188 F.3d 1369. Whether claims are sufficiently enabled by a disclosure in an earlier application is determined as of the date that application was first filed. Hybritech v. Monoclonal Antibodies, 802 F.2d 1367, 1384 (Fed. Cir. 1986); Ajinmoto Co. v. Archer-Daniels-Midland Co., 228 F.2d 1338, 1345 (Fed. Cir. 2000); United States Steel Corp. v. Phillips Petroleum Co., 865 F.2d 1247, 1251-52 (Fed. Cir. 1989). Clear and convincing evidence is required to invalidate a patent for failure to meet the enablement

requirement. Johns Hopkins, 152 F.3d at 1359.

1. Humanized Monoclonal Antibodies

The '561 patent broadly claims a genus of monoclonal antibodies capable of binding to HER2, including altered, chimeric, and humanized antibodies. Genentech contends that the parent applications cannot support the broad claims of the '561 patent because they do not enable humanized antibodies.

It is undisputed that neither the 1984, 1985 or 1986 applications describe how to make humanized anti-HER2 monoclonal antibodies. It is also undisputed, however, that humanized antibodies did not exist during this time period. According to the expert testimony of various witnesses, a person of ordinary skill in the art would have become familiar with humanization techniques in approximately 1987 or 1988. (See Harris Dep. at 21-22, 60-61; Larrick Dep. at 91-90.)

As a matter of law, the parent applications do not need to teach how to make humanized antibodies, because an application need not enable later-developed art unknown at the time of filing. In re Hogan, 559 F.2d 595, 605-606 (C.C.P.A. 1977). The rationale behind this rule is set forth in In re Hogan:

> Appellants disclosed, as the only then existing way to make such a polymer, a method of making the crystalline form. To now say that appellants should have disclosed in 1953 the amorphous form which on this record did not exist until 1962, would be to impose an impossible burden on inventors and thus on the patent system. There cannot, in an effective patent system, be such a burden placed on the right to broad claims. To restrict appellants to the crystalline form disclosed, under such circumstances, would be a poor way to stimulate invention, and particularly to encourage its early disclosure.
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> Consideration of later existing state of the art in testing for compliance with s 112, first paragraph,

> would not only preclude the grant of broad claims, but would wreak havoc in other ways as well. The use of a subsequently-existing improvement to show lack of enablement in an earlier-filed application on the basic invention would preclude issuance of a patent to the inventor of the things improved, and in the case of issued patents, would invalidate all claims. . . therein. Patents are and should be granted to later inventors upon unobvious improvements. Indeed, encouragement of improvement on prior invention is a major contribution to the patent system and the vast majority of patents are issued on improvements. It is quite another thing, however, to utilize the patenting or publication of later existing improvements to 'reach back' and preclude or invalidate a patent on the underlying invention.

Id. This rationale applies with equal force here. Because humanized antibodies were developed after the parent applications were filed, the parent applications were not required to enable them. See Hormone Research Found., Inc. v. Genentech, Inc., 904 F.2d 1558, 1568 (Fed. Cir. 1990)(finding that a patent for synthetic human growth hormone would not be invalid for lack of enablement "[m]erely because purer and more potent forms of the Figure 2 compound might be produced using later-discovered technology. . . ."). Genentech argues that Hogan's holding is limited to situations in which later-developed improvements arise after the filing of the claims at issue, rather than after the filing of the initial application on which those claims rely for priority. However, the rule in Hogan has been applied to circumstances in which a new development arose before the applicant applied for broad claims, but after the applicant filed an earlier patent application. See United States Steel, 865 F.2d at 1250. Thus, contrary to Genentech's assertions, Hogan applies where new embodiments of the invention come into existence after the parent

application is filed, regardless of whether the claims at issue are filed before or after the new development.

Genentech also relies on a line of Federal Circuit cases that collectively stand for the proposition that a patent applicant cannot broadly claim an invention if only part of that invention is enabled. See Enzo Biochem, Inc. v. Calgene, Inc., 188 F.3d 1362 (Fed. Cir. 1999); In re Goodman, 11 F.3d 1046 (Fed. Cir. 1993); Amgen, Inc. v. Chugai Pharm. Co., 927 F.2d 1200 (Fed. Cir. 1991). Enzo, Goodman, and Amgen are distinguishable from the present situation because the patent claims in those cases covered known, existing embodiments that the specifications did not enable. In Goodman, 11 F.3d 1046, for example, the claims of the patent broadly covered a method for producing "any desired mammalian peptide . . . in any plant cell." The specification offered a single working example of how to use the method in dicotyledonous tobacco plants. The court found that the specification did not enable the broad scope of the invention claimed, because it did not teach how to produce mammalian proteins in monocotyledonous plants. From the time the parent application was filed, it only enabled part of what a person of ordinary skill in the art would understand to be claimed.

Enzo, 188 F.3d 1362, is similar. The patent at issue in that case involved antisense technology, which aims to control the expression of a particular gene by blocking the translation of messenger RNA. The claims of the patent were broadly drafted to encompass the application of antisense technology in a wide range of organisms. However, the specification taught only how to use antisense technology to regulate the expression of genes

in E. Coli bacteria. The court found that "the breadth of enablement in the patent specification is not commensurate in scope with the claims, as the quantity of experimentation required to practice antisense in cells other than E. coli at the filing date would have been undue." Id. at 1377. As in Goodman, a person of ordinary skill in the art at the relevant time would have recognized that the patent covered more than it enabled.

Similarly, in Amgen, 927 F.2d 1200, the disclosure did not enable a broad claim covering all possible DNA sequences encoding analogs for "EPO," a protein capable of increasing the production of red blood cells. Id. at 1214. The court found that because the EPO gene was complex and the characteristics of the possible analogs of the gene were unpredictable, undue experimentation would be required to make all of the DNA sequences that were claimed. The court therefore concluded that "[i]t [was] not sufficient, having made a handful of analogs whose activity has not been clearly ascertained, to claim all possible genetic sequences that have EPO-like activity." Id. Again, the full scope of the invention that was known to persons in the field at the time was not enabled by the specification. Persons of ordinary skill in the art could recognize what was claimed, but could not make all of it using the teachings of the specifications.

In this case, by contrast, the universe of anti-HER2 monoclonal antibodies known to persons in the field in the 1984-1986 time period did not include humanized antibodies. See Hogan 559 F.2d at 605-606 (enablement requirement met where only one form of the invention existed at the time the

application was filed, and those skilled in the art were able make the invention in that form using the techniques described in the specification). Therefore, the failure of the parent applications to enable humanized antibodies is not fatal to Chiron's claim that the '561 patent is entitled to the benefit of the filing dates of those applications.

2. Hybrid and Chimeric Antibodies[3]

Whether the parent applications must enable hybrid and chimeric antibodies, however, is a different question.[4] Although no one had successfully humanized an antibody at the time the priority applications were filed, the evidence in the record reflects that chimeric antibodies had been discovered by February of 1984, when Cetus filed the first patent application in the '561 patent chain. The '561 patent, for example, cites a patent filed on April 8, 1983 which describes a method for making a chimeric antibody. (See '561 Patent Col 2:65 (citing U.S. Patent No. 4,816,567)). Chiron's expert, Dr. Lanier, testified that "it was possible to make molecules which were hybrids between human

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[3] Chiron argues that Genentech should be precluded from making various arguments (including the argument that the patent is invalid because it does not enable chimeric antibodies), because Genentech failed to identify those arguments in response to Chiron's interrogatories. However, Chiron has not asked for more discovery on these issues (in fact, the factual record appears to be quite complete) and has not alleged that it was in any way prejudiced by Genentech's actions. The court refuses to preclude the assertion of substantive issues solely on a technicality.

[4] Genentech contends, without citing any supporting evidence, that the specifications fail to enable altered antibodies. All of the evidence is to the contrary. An antibody is "altered" when it is conjugated with a toxin, and each of the parent applications describes how to make immunotoxins with monoclonal antibodies. (See 1984 Application at 23-25; 1985 Application at 23-26; 1986 Application at 23-26).

and mouse antibodies that were being described in 1983." (Lanier Dep. at 32; Lanier Decl. ¶ 13 (stating that scientists had described how to make chimeric antibodies in the 1984-1985 time frame)). In addition, in June of 1984, a European patent application was filed describing protocols for making chimeric antibodies, and in November of 1984 Dr. Sherie Morrison and others published an article describing how they produced a chimeric mouse-human antibody.[5] (Harris Decl., Exs B, C.)

Hogan, therefore, does not excuse Chiron's failure to disclose chimeric or hybrid antibodies. While a specification need not enable "amorphous form[s]," and "later-existing improvements," Hogan, 559 F.2d at 605-606, it must nevertheless enable those of ordinary skill in the art to practice the invention as broadly as it is claimed at the time of filing. In re Vaeck, 947 F.3d 488, 496 (Fed. Cir. 1991); In re Fisher, 427 F.2d 833 (C.C.P.A. 1970)("the scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skill in the art."); Hogan, 559 F.2d at 605-606 (finding patent enabled because it disclosed "the only then existing way" to make the claimed invention). In this case, chimeric antibodies were within the scope of the invention in 1984 and 1985, and therefore they must be enabled by

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[5] Chiron asserts that no articles regarding chimeric antibodies had been published until after the 1984 application was filed. This does not mean, however, that chimeric antibodies did not exist in 1983. Indeed, given the lag time between scientific discovery and publication, the appearance of articles in 1984 suggests that chimeric antibodies were being discovered in 1983. Later publications may be used as evidence of the condition of knowledge about all art-related facts existing at the time a patent application was filed. Hogan, 559 F.2d at 605.

the priority applications.

Chiron argues that even if Hogan does not apply, the parent applications do not, as a matter of law, need to enable chimeric antibodies. Chiron contends that because the invention does not claim chimeric antibodies per se, but rather monoclonal antibodies that bind to HER2, it is irrelevant whether chimeric antibodies are enabled. This argument does not square with the line of Federal Circuit authority holding that the full scope of a broad claim is not enabled simply by enabling a handful of analogs. See eg. Amgen, 927 F.2d 1200; Goodman, 11 F.3d 1046.

Chiron also argues that because chimeric techniques are just one mode of making the monoclonal antibodies of the invention, the enablement requirement is met so long as other methods for making anti-HER2 monoclonal antibodies are enabled by the parent applications. The Federal Circuit has held that "the enablement requirement is met if the description enables any mode of making and using the claimed invention." Engel Indus. V. Lockformer Co., 946 F.2d 1528, 1533 (Fed. Cir. 1991)(emphasis added); Johns Hopkins, 152 F.3d at 1360. As Genentech points out, "the issue is whether the parent applications disclose modes of manufacturing the full range of monoclonal antibodies that fall within the scope of the claims, not, as Chiron suggests, merely whether the application must disclose different modes for the manufacture of the same antibodies." (Genentech Reply at 2 n.1.) It is the claimed invention that must be enabled. Non-chimeric techniques, such as hybridoma technology, are methods of making part, but not all of what is claimed.

The Federal Circuit's leading case on enablement in the

context of claims to monoclonal antibodies, Johns Hopkins v. Cell Pro, is not to the contrary. 152 F.3d at 1347. In Johns Hopkins, the claims of the patent were drawn to a genus of monoclonal antibodies that bind to an antigen known as "My-10." The specification described how to make a single anti-My-10 antibody using hybridoma technology, and the patentee had deposited the hybridoma used to produce the antibody with the ATCC. The alleged infringer argued that the patent was invalid for lack of enablement because it failed to describe how other anti-My-10 antibodies could be made. The Federal Circuit disagreed. It found that the Kohler and Millstein method of making monoclonal antibodies from hybridomas was sufficiently well known in the art such that one could routinely apply those techniques to produce other monoclonal antibodies capable of binding to the My-10 antigen without undue experimentation. Id. at 1361.

Johns Hopkins, however, did not discuss chimeric or humanized antibodies. The assumption in Johns Hopkins and other monoclonal antibody cases from the Federal Circuit appears to be that all monoclonal antibodies come from hybridomas. See id. at 1347 ("Monoclonal antibodies, which are uniform in their binding properties, are produced by cloned cells known as hybridomas."); Wands, 858 F.2d at 733 ("Antibodies produced by a clone of hybridoma cells . . . are called monoclonal antibodies); Hybritech, 802 F.2d at 1369 ("These antibodies, known as 'monoclonal antibodies' because they arise from a single clone of lymphocytes, are produced by a relatively new technology known as the hybridoma.") Therefore, Johns Hopkins is not particularly

useful in answering the question of whether the scope of the claims as defined in the '561 patent are fully enabled by the disclosures in the priority applications. Johns Hopkins by no means suggests that merely depositing a hybridoma that produces antibodies against a particular antigen would enable one of ordinary skill in the art to produce a chimeric antibody, particularly if techniques for making chimeric antibodies were not well known in the art or routinely practiced at the time. The priority applications must therefore enable chimeric antibodies.

The 1984, 1985, and 1986 specifications provide no guidance whatsoever as to how to make a chimeric antibody, and there are no working examples of such antibodies in the priority specifications. See Wands, 858 F.2d at 735 (noting that guidance and working examples are factors in determining whether undue experimentation is required to practice the invention). It is also undisputed that, at least in February of 1984 when the 1984 application was filed, it was not routine practice for those of ordinary skill in the art to make chimeric antibodies. (Unkeless Dep. at 105, 182.) "Where, as here, the claimed invention is the application of an unpredictable technology in the early stages of development, an enabling description in the specification must provide those skilled in the art with a specific and useful teaching." Genentech, Inc. v. Novo Nordisk, 108 F.3d 1361 (Fed. Cir. 1997); see also Wands, 858 F.2d at 753 (noting that one factor to consider is the level of skill in the art). No such

teaching is found in the 1984 application.[6]

Chiron argues that the 1985 and 1986 applications are different, because by the time they were filed, techniques for making chimeric antibodies were well known in the art. According to Chiron's expert, Dr. Harris, a skilled artisan would have been able to make a chimeric antibody by January 11, 1985, when the second patent application was filed, using the teachings in articles on chimeric antibodies published in November and December of 1984. (Harris Decl. ¶¶ 17-20.) Dr. Harris explains that these publications describe how to take DNA from a hybridoma and use "standard" recombinant DNA technology to splice it to a human constant region. (Id. ¶ 20.) Thus, he opines that one of ordinary skill in the art could take the deposited 454 C11 hybridoma described in the 1985 and 1986 application and use it to make a chimeric antibody that bound to HER2. (Id.) Chiron argues that because "[a] patent need not teach, and preferably omits what is well known in the art," Hybritech, 802 F.2d at 1384, there was no need to enable a chimeric antibody in 1985 or 1986.

Moreover, Chiron contends that chimeric antibodies are predictable because they retain the binding sites of the animal antibody; so long as the binding properties of the animal

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[6] Although the 1984 application does not appear to be enabling, the court in its discretion chooses not to narrow issues where doing so does not eliminate a claim or defense. In the court's experience, the piecemeal resolution of issues makes trial more difficult and complex instead of streamlined. As discussed at length below, disputed issues of material fact exist with respect to whether the 1985 and 1986 disclosures enable chimeric antibodies. Thus, the enablement defense cannot be resolved on summary judgment even if the court rules that the 1984 application is not enabling.

antibody are known, it is predictable what the chimeric antibody will do. See Wands, 858 F.2d at 735 (noting that the predictability of the art is one factor to consider in determining enablement). Dr. Harris explains in his declaration that the techniques known in 1985 and 1986 recommend splicing the variable region of the mouse antibody at a position far from the antigen binding site, which makes the splicing process unlikely to affect the binding characteristics of the resulting chimeric antibody. (Harris Decl. ¶ 17.) Dr. Harris notes that roughly 90% of the chimeric antibodies he and his co-workers have made have comparable binding affinity as the parent antibody. (Id.) Genentech has not presented any evidence to refute Dr. Harris's testimony regarding the level of predictability in making chimeric antibodies; all of Genentech's evidence is directed toward the lack of predictability in making humanized antibodies, which as discussed above need not be enabled by the parent applications. (See Presta Dep. at 18-19 (discussing skill and intuition needed to determine how changes to the amino acid sequence of the antibody will affect its binding properties).)

However, there is a disputed issue of material fact as to whether one of ordinary, as opposed to extraordinary, skill in the art could make a chimeric antibody in 1985 and 1986 without any guidance whatsoever from the parent applications. See Standard Oil Co. v. American Cyanamid Co., 774 F.2d 448, 454 (Fed. Cir. 1985)("[a] person of ordinary skill in the art is . . . presumed to be one who thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate, whether by patient, and often expensive, systematic research or

by extraordinary insights"). Dr. Unkeless testified in his deposition that during this general time period (he did not specify what year), chimeric antibodies were on the "cutting edge" of monoclonal antibody technology. (Unkeless Dep. at 182-183.) Moreover, an inference can be drawn in Genentech's favor that Dr. Harris is not credible in his representation that making chimeric antibodies was well known to and routinely practiced by persons of ordinary skill in the art by February 1985 - just two months after the first publication describing the technique. This inference is of course less strong with respect to the 1986 application, but it does not disappear. The credibility of Drs. Harris and Unkeless is ultimately an issue for the jury, not the court, to decide.

3. Enablement of Other Anti-HER2 Monoclonal Antibodies

Because disputed issues of material fact exist as to whether the parent applications enable chimeric antibodies, Chiron is not entitled to summary judgment on the question of enablement. However, Genentech advances an alternative theory that the court must address before it can rule on Genentech's cross motion for summary judgment.

Genentech argues that, setting aside the question of whether humanized or chimeric antibodies are enabled, the parent applications do not enable a person of ordinary skill in the art to make any monoclonal antibodies that bind to HER2 other than the antibodies specifically identified in the parent applications (e.g. 454 C11, 520 C9, etc.). According to Genentech's expert, Dr. Unkeless, undue experimentation would be required to make other antibodies to the HER2 antigen because the parent

applications fail to disclose how to identify the antigen to which the monoclonal antibodies bind, or what immunogen to use to generate the antibodies. (Unkeless Decl. Ex. A at 16; Unkeless Dep. at 33-34.) The Board of Patent Appeals and Interferences ("BPAI") came to a similar conclusion with respect to Chiron's 1986 application, which claims, among other things a genus of monoclonal antibodies that "competitively inhibit[] the binding of either monoclonal antibody 2G3 or 247 E7 to a mucin human breast cancer antigen that is precipitable by either 2G3 or 245 E7." The BPAI rejected the genus claims, finding that because the referenced antigen "has neither been isolated and deposited nor otherwise made available for testing antibodies to determine whether said antibodies are within the scope of the claim . . . it would, at the very least, involve undue experimentation to determine the antibodies to which claim 1 is directed." (Durie Decl. Ex. W.) Although the BPAI decision concerns different monoclonal antibodies and different claims than the ones at issue in this case, Genentech argues that its logic applies here because the 1984 and 1985 applications do not indicate that the antigen was either isolated or deposited, and do not otherwise identify the antigen.

At a minimum, other decisions from the PTO, as well as testimony from Chiron's expert, Dr. Lanier, preclude summary judgment in Genentech's favor on this theory. While prosecuting one of its own patent applications, Genentech argued that Chiron's 1985 application did not enable other monoclonal antibodies that bind to HER2. The PTO rejected that argument, stating that "based on the information disclosed, deposits,

information described with regard to how the antibody was made, and methods to screen for antibodies with similar properties . . ., one of skill in the art would be enabled to reproduce an antibody which bound to the antigen." (Jorjani Decl. Ex. 6, at 10, April 18, 2001 Office Action). See Wands, 858 F.3d at 735 (holding that a deposit of biological materials can satisfy the enablement requirement if there is sufficient teaching in the specification about how to use the materials on deposit to make the claimed invention).

Chiron's expert, Dr. Lanier, agrees that the deposit of the 454 C11 hybridoma cell line with the ATCC would have allowed a person of ordinary skill in the art in 1984 and 1985 to make other, different anti-HER2 antibodies. See Wands, 858 F.2d at 753 (holding that in certain circumstances, the deposit of biological materials can satisfy the enablement requirement). Dr. Lanier explains that as of 1984, it would have been apparent to a skilled artisan to use the deposited antibody as a reagent to purify or partially purify the antigen to which it binds, which could be accomplished by employing well-known immunoprecipitation or affinity chromatography techniques. The purified antigen could then be used as an immunogen to generate monoclonal antibodies, which could be tested to determine whether they bind to same antigen as 454 C11. (Lanier Decl. ¶¶ 8, 18, 19.)

That some experimentation would have been necessary to produce additional monoclonal antibodies in the manner described by Dr. Lanier does not mean that the parent applications are not enabling. According to Dr. Lanier, because methods for purifying

antigens and making and screening monoclonal antibodies were "generally known to those of ordinary skill in the art in 1984," generating additional antibodies to HER2 "could have been accomplished without the need for unusual or innovative experiments." (Lanier Opp'n Decl. ¶ 6; see also Unkeless Dep. at 138-139; Adair Dep. at 182-183 (acknowledging that immunoprecipitation techniques were well known in the art in 1984 and 1985.)) If, as Dr. Lanier suggests, these experiments are merely routine, they do not constitute undue experimentation. Johns Hopkins, 152 F.3d at 1360 (finding that genus of monoclonal antibodies that bound to the My10 antigen were enabled despite expert testimony that it was generally more difficult to produce those antibodies, where techniques for making monoclonal antibodies were well known but not foolproof, and routinely required repetition.)

Nor is it fatal to Chiron's case that the parent applications do not describe purification techniques. It is well settled that "[a] patent need not disclose what is well known in the art," Wands, 858 F.2d at 735, and it is undisputed that purification techniques were well known in the art at the time.[7]

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[7] In addition to pointing to other PTO decisions and the testimony of its expert witness, Chiron argues that the BPAI decision is irrelevant because it concerns different claims and a different antigen. Chiron also contends that Dr. Unkeless's testimony is insufficient as a matter of law to support a finding in Genentech's favor that the parent applications fail to enable any other anti-HER2 monoclonal antibodies. These arguments are not without merit. However, even if the court were to accept them, Chiron would not be entitled to summary judgment that the parent applications enable the full scope of the claims in the '561 patent. Disputed issues of material fact remain as to whether chimeric antibodies are enabled by those applications. As mentioned supra at 18 n.6, the court will not narrow issues

Therefore, Genentech is not entitled to summary judgment on the question of enablement. Accordingly, the court will deny both parties' motions for summary judgment on Genentech's lack of enablement defense.

B. Written Description

The parties also bring cross motions for summary judgment on the question of whether the parent applications meet the written description requirement of section 112. The written description requirement is separate and distinct from the enablement requirement. "To fulfill the written description requirement, the patent specification must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed." Gentry Gallery, Inc. v. Berkline Corp., 134 F.3d 1473, 1479 (Fed. Cir. 1998) (internal quotations omitted). Thus, the application relied on for priority must reasonably convey to a person skilled in the art that the inventor had possession of the claimed subject matter at the time of the filing date. See Purdue Pharma L.P. v. Faulding, Inc., 230 F.3d 1320, 1323-24 (Fed. Cir. 2000); Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1562-63 (Fed. Cir. 1991).

The purpose of the written description requirement is to prevent "the inventor's overreaching by insisting that he recount his invention in such detail that his future claims can be determined to be encompassed within his original creation." Vas-Cath, 935 F.2d at 1561. Whether a specification meets the

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where doing so will not dispose of a claim or defense. Therefore, the court does not opine as to whether, as a matter of law, the '561 patent enables the production of other anti-HER2 monoclonal antibodies.

written description requirement is a question of fact. Vas-Cath, 935 F.2d at 1563.

Genentech advances two separate grounds on which the parent applications purportedly fail to meet the written description requirement. Genentech argues that (1) the parent applications do not describe the genus of monoclonal antibodies claimed; and (2) the parent applications contain an essential element that does not appear in the claims of the '561 patent.

1. Claims To a Genus

Genentech contends that the specifications of the 1984 and 1985 applications fail to meet the written description requirement because they describe only one species of antibody (murine monoclonal antibodies) and identify only a small number of antibodies within the broad genus claimed in the '561 patent.

"A specification may, within the meaning of 35 U.S.C. § 112 ¶ 1, contain a written description of a broadly claimed invention without describing all the species that claim encompasses." Utter v. Hiraga, 845 F.2d 993 (Fed. Cir. 1988). Thus, the bare fact that the priority applications fail to describe humanized and chimeric antibodies, and identify only 454 C11 and a handful of other anti-HER2 antibodies does not automatically mean that those applications fail to meet the written description requirement.[8] So long as one of ordinary skill in the art can "visualize or recognize the identity of the members of the genus" from reading the specification, the genus

[8] Indeed, because humanized antibodies did not exist in 1984 and 1985, the parent applications did not have to describe them. U.S. Steel Corp. v. Phillips Pertroleum Co., 865 F.2d 1247, 1251 (Fed. Cir. 1989).

claims are adequately described. Regents of the Univ. of Cal. v. Eli Lilly & Co., 119 F.3d 1559, 1568 (Fed. Cir. 1997).

The Patent and Trademark Office has promulgated guidelines to be used by patent examiners in determining whether patent applications meet the written description requirement. Guidelines for Examination of Patent Applications Under the 35 U.S.C. §112.1 "Written Description Requirement", 66 Fed. Reg. 1099, 1106 (Jan. 5, 2001)(hereinafter "Guidelines"). Although the Guidelines are not binding authority, see Refac Int'l v. Lotus Dev. Corp., 81 F.3d 1576, 1584 n.2 (Fed. Cir. 1996), they track the case law and are helpful in illustrating the circumstances in which the written description requirement is met.

According to the Guidelines, an application drawn to a genus meets the written description requirement if it either (1) describes "a representative number of species by actual reduction to practice," or (2) discloses "relevant, identifying characteristics, ie. structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus." Id.

a. Representative Number of Species

A "representative number of species" will reflect the variation of species within the genus. Guidelines, 66 Fed. Reg. At 1106. Thus, in arts where the species vary widely and their characteristics are unpredictable, a description of one species will ordinarily be insufficient to lay claim to the genus. Id.

Dr. Lanier, Chiron's expert, opines that species of anti-HER2 antibodies are not widely variant, and that 454C11 is representative all monoclonal antibodies that bind to HER2: "The monoclonal antibodies of that genus could be either from a different species (e.g., rat, hamster, or human) or be a genetically engineered variant (e.g. humanized or chimeric). All such antibodies will have a similar binding characteristic as 454 C11." (Lanier Decl. ¶ 18.) Dr. Lanier's testimony permits the inference that a person of ordinary skill in the art would be able to visualize the characteristics of all other antibodies that bind to HER2 simply by reading the description of 454 C11 in the parent applications.

However, as Genentech points out, there are different epitopes (binding sites) on the HER2 antigen. Because each antibody is custom-tailored to fit around a specific binding site on an antigen, monoclonal antibodies that bind to one epitope on the antigen may not be representative of monoclonal antibodies that bind to other epitopes on HER2. The 1984 application identifies monoclonal antibodies that bind to one epitope on the antigen of interest. The 1985 application identifies seven monoclonal antibodies, but notes that all but one of them bind to the same epitope on the antigen. Therefore, disputed issues of fact exist as to whether the antibodies identified in the parent applications are representative of the genus claimed in the '561 patent.

b. Relevant Identifying Characteristics

Another way to claim a genus of monoclonal antibodies, according to the Guidelines, is by adequately describing the

antigen to which the monoclonal antibodies bind:

> Considering the routine art-recognized method of making antibodies to fully characterized antigens, the well-defined structural characteristics for the five classes of antibody [IgM, IgG, IgD, IgA and IgE], and the fact that antibody technology is well developed and mature, one of skill in the art would have recognized that the spectrum of antibodies which bind to antigen X [are] implicitly disclosed as a result of the isolation of antigen X.

Synoposis of Application of Written Description Guidelines, http://www.uspto.gov/web/patents/guides.htm. Genentech argues that the parent applications fail to describe the HER2 antigen, and therefore do not describe "any structural features commonly possessed by members of the genus that distinguish them from others." Eli Lilly, 199 F.3d at 1568.[9]

Although neither the 1984 nor the 1985 application identifies the antigen by name, both applications give some information about the antigen and about the common structural features of the antibodies that bind to that antigen. The 1984 application indicates that the antigen bound by 454 C11 is associated with breast cancer, and identifies the range of breast cancer cell lines and breast cancer tissue sections on which the antigen is present. (1984 Application, at 17-20.) The 1984 application also discloses the range of other cancers, as well as range of normal tissues and blood cells, on which the antigen is

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[9] The parties dispute whether a description of purely functional characteristics is sufficient to meet the written description requirement. The court need not address this question because, as discussed further infra, the parent applications identify more than just the functional properties of the antibodies. The 1984 and 1985 applications disclose a fair amount of information about the physical properties of the HER2 antigen, which in turn defines the structural properties of the antibodies that bind to it.

found. (Id. at 14-16.)

The 1985 application contains more information about the antigen. In addition to the above, it states that 454 C11 and 520 C9 are among seven monoclonal antibodies that bind to a common antigen having an approximate molecular weight of 210,000 daltons. (1995 Application at 30.) The 1985 application also describes the antibodies on deposit, and identifies the binding affinities of those antibodies.[10]

According to Dr. Lanier, the information in the parent applications is sufficient to advise a person of ordinary skill in the art "that the inventors of the application had identified and actually invented new monoclonal antibodies that bound to a particular antigen." (Lanier Decl. ¶¶ 24-27.) Dr. Lanier also avers that in the 1984-1985 time period it was common to identify an antigen by the monoclonal antibodies that bound to it. (Id. ¶ 27.) This evidence supports the conclusion that a person of ordinary skill in the art would understand the antigen and all monoclonal antibodies that bound to it to be described in the parent applications by the virtue of the fact that (1) the parent applications identify some antibodies that bound to the antigen, and (2) the parent applications disclose a fair amount of information about the characteristics of the antigen and antibodies.

However, there is evidence in the record to support the opposite conclusion. For example, the 1985 application discloses

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[10] 1986 application discloses an additional six antibodies that bind to the same antigen, and states that the molecular weight of the antigen is approximately 200,000 daltons

the molecular weight of the antigen as 210,000 daltons, when the molecular weight of HER2 is 185,000 daltons. A reasonable jury could therefore find that a person of ordinary skill in the art would not have recognized from the parent applications that the inventors were in possession of the HER2 antigen or all of the monoclonal antibodies that bound to it.[11] Vas-Cath, 935 F.2d at 1562-63 (holding that the application relied on for priority must reasonably convey to a skilled artisan that the inventor had possession of all that is claimed at the time the application was filed). In addition, Dr. Ring's 1989 article, which mistakenly suggests that the antigen he and Dr. Frankel discovered (BCA200) is not HER2, supports an inference that the inventors of the '561 patent did not know the nature of the antigen to which their monoclonal antibodies bound, and therefore could not have written an application conveying sufficient information about the antigen or the genus of monoclonal antibodies that bind to the antigen. Whether the applications describe more than just the handful of monoclonal antibodies specifically identified therein is

[11] Claim 19 of the '561 patent claims a "monoclonal antibody that binds to c-erbB-2." As Genentech points out, if the c-erbB-2 (HER2) antigen was not disclosed inherently in the parent applications, claim 19 is "new matter" entitled to at best a 1995 priority date. A claim does not add new matter if it simply makes explicit what was inherently disclosed in prior applications. In order for a disclosure to be "inherent," the "missing descriptive matter must necessarily be present in the parent application's specification such that one skilled in the art would recognize such a disclosure." Tronzo v. Biomet, Inc., 156 F.3d 1154, 1159 (Fed. Cir. 1998). Given the discrepancy between the molecular weight of HER2 and the weight disclosed in the parent applications, it is not clear that a person skilled in the art would recognize that the antigen described in the parent applications was the same as HER2. Thus, disputed issues of fact exist as to whether claim 19, like the other claims in the patent, is entitled to rely on the parent applications for priority.

therefore not a matter that the court can resolve on summary judgment.

2. Essential Element

Genentech argues that the parent applications fail to meet the written description requirement for the independent reason that they indicate to a person of ordinary skill in the art that the invention is limited only to monoclonal antibodies that (1) are IgG or IgM isotypes, and that (2) when "conjugated" (i.e. linked) to a toxin, will inhibit the ability of the breast cancer cells to which they attach to synthesize protein by 50%.

In Gentry Gallery v. Berkline Corp., the Federal Circuit held that when an application read in its entirety clearly indicates that the invention is of a narrow scope, its written description will not support broader, later-drafted claims. 134 F.3d 1473, 1479 (Fed. Cir. 1998). Gentry Gallery involved a patent for a sectional sofa with reclinable seats. The application in question identified a console between the seats as the only possible location for the recliner controls. The patentee had also drafted his original claims with the controls on the console. The Federal Circuit found from this disclosure that it was "clear that [the inventor] considered the location of the recliner controls on the console to be an essential element of his invention. Accordingly, his original disclosure serves to limit the permissible breadth of his after-drafted claims." Id. at 1479-80; see also Tronzo v. BioMet, Inc., 156 F.3d 1154 (Fed. Cir. 1998)(original specification clearly limited to only a conical hip prosthesis did not support later-filed claims to prostheses of other shapes).

The Federal Circuit recently clarified the holding of Gentry Gallery in Cooper Cameron Corp. v. Kvaerner Oilfield Products, Inc., 2002 U.S. App. LEXIS 9174, No. 01-1383, No. 01-1408 (Fed. Cir. May 14, 2002). Cooper Cameron emphasized that Gentry Gallery did not "announce a new 'essential element' test mandating an inquiry into what an inventor considers to be essential to his invention and requiring the claims to incorporate those elements." Id. However, Cooper reaffirmed the central principle in Gentry Gallery that "a broad claim is invalid when the entirety of the specification clearly indicates that the invention is of a much narrower scope." Id. at *15.

The parent applications in this case repeatedly refer to the immunotoxin properties and the isotype of the antibodies as "important characteristics" and "principal aspect[s]" of the invention. (See 1984 Application at 2, 5; 1985 Application at 2, 5.) Virtually all of the claims in the parent applications also contain a limitation stating that the monoclonal antibodies must be a certain isotype and have a certain potency as a toxin such that "[w]hen conjugated to ricin A chain exhibit a TCID 50% against MCF-7 cells of less than about 10nM." (1984 Application, at 28-30; 1985 Application at 32-35.) In addition, the 1985 application identified seven monoclonal antibodies that bound a common 210,000 dalton antigen, and describes testing conjugates of these antibodies to determine TCID 50%. (1985 Application at 30; 25-26.) Although it is not readily apparent to the court, Genentech interprets certain tables in the 1985 application to mean that of these seven antibodies, the 1985 application expressly claims the only two - 454 C11 and 520 C9 - that had a

TCID 50%. (Id. at 26.) Chiron does not appear to dispute this interpretation.

This evidence supports the conclusion that one of ordinary skill in the art would think that the invention described in the parent applications was clearly limited to monoclonal antibodies having a TCID 50% potency as an immunotoxin. Particularly in the 1985 application, the inventors appear to be selecting out and not claiming monoclonal antibodies that fail to meet the TCID 50% criteria. In addition, it is undisputed that while prosecuting the 1985 application, Chiron referred to the TCID 50% limitation as "a critical limitation" that distinguished the invention over prior art. Chiron argues that this statement is irrelevant because "the proper inquiry under section 112 is what is described in the specification, not the prosecution history." (Chiron Opp'n at 31.) Not so - the proper inquiry is what a person of ordinary skill in the art would have understood from reading the specification; as one skilled in the art, Chiron's understanding of the meaning of its own patent application is probative on this point.

Chiron, however, has introduced sufficient evidence to create a disputed issue of material fact regarding whether a person of ordinary skill in the art would understand the parent applications to be "clearly" limited to antibodies with certain isotypes and immunotoxic properties. Cooper Cameron, 2002 U.S. App. LEXIS 9174, at *15. The parent applications describe uses for monoclonal antibodies, such as cancer diagnosis, which do not require a particular isotype or linkage to a poison. According to Dr. Lanier, one of ordinary skill reading the parent

applications "would not consider the isotype and immunotoxin effectiveness characteristics of the claimed monoclonal antibodies essential" because those characteristics play no role in diagnosis. (Lanier Decl. ¶ 17.) Dr. Lanier's testimony is sufficient to create a triable issue of fact. Therefore, neither party is entitled to summary judgment on Genentech's defense that the patent is invalid because the parent applications fail to meet the written description requirement.

C. Extracellular Domain Claims

Several claims in the '561 patent contain limitations or elements that are not found in other claims. For example, a number of the dependent claims in the '561 patent are directed toward monoclonal antibodies that bind to the extracellular domain of the referenced antigen. ('561 Patent, Claims 3, 7, 11, 15, 21, 25)(the "extracellular domain claims"). These claims raise additional written description and enablement issues, because the requirements of section 112 apply to each claim in the patent. See 35 U.S.C. § 282 ("Each claim of a patent (whether independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims"); Vas-Cath, 935 F.2d at 1559.[12]

Genentech contends that the extracellular domain limitation is not supported by the parent applications, and that therefore the extracellular domain claims are invalid even if other claims in the patent are entitled to rely on the 1984 or

[12] Chiron moves for summary judgment on this issue. Genentech did not file a cross motion for summary judgment on this issue, but opposes Chiron's motion.

1985 application for priority. See Purdue Pharma L.P. v. Faulding, Inc., 230 F.3d 1320, 1325-36 (Fed. Cir. 2000)(invalidating a patent whose priority application failed to disclose a limitation found in the patent's claims). The parent applications do not explicitly state that the monoclonal antibodies of the invention bind to the extracellular domain of the antigen. Where an element is not explicitly described, it may nevertheless be implicit or "inherent" in the specification if one of ordinary skill in the art, reading the original disclosure, can reasonably discern the limitation at issue. Crown Operations Int'l, Ltd. v. Solutia, Inc., 2002 U.S. App. Lexis 9173, at *10 (Fed. Cir. May 13, 2002).

Here, experts for both Chiron and Genentech agree that a person of ordinary skill in the art would have understood the monoclonal antibodies described in the parent applications to bind to the extracellular domain of the antigen. Dr. Lanier testified that because the applications describe the use of live cells in immunoassays, and because antibodies cannot bind anywhere except the extracellular domain on live cells, a skilled artisan would understand the monoclonal antibodies of the invention to bind to the extracellular domain. (Lanier Dep. at 168-169.) Dr. Adair, one of Genentech's experts, agreed that if an antibody were to stain a live breast carcinoma cell by immunofluoresence, that would suggest extracellular binding. (Adair Dep. at 171-172.) In addition, although Dr. Unkeless opines in his expert report that the 1984 and 1985 applications do not suggest binding to the extracellular domain, he testified at his deposition that the anti-HER2 antibodies developed by

Cetus "are obviously directed against the extracellular domain." (Unkeless Decl. Ex. A at 20; Unkeless Dep. at 202.)

The evidence Genentech offers in support of its argument is that the 1984 application states that some of the antibodies that were made "gave intracellular binding only after fixation with acetone."[13] (1984 Application at 19-20). The 1984 application, however, identifies the antibodies that gave intracellular binding as 41B4 and 87H7, neither of which bind the same antigen bound by 454 C11 or 520 C9. (See 1984 Application at 19; 1985 Application at 30 (identifying antibodies that bind to same antigen as 454 C11 and 520 C9); 1986 Application at 30 (same).) There is no reason to believe that a person of ordinary skill in the art would understand 454 C11, 520 C9 or other anti-HER2 antibodies to bind to the intracellular domain of c-erbB-2 simply because 41B4 and 87H7 bound to the intracellular domain of some other antigen. Moreover, the 1984 application clarifies that an additional step - fixation with acetone - was necessary for intracellular binding to occur. The default assumption would have been, as Dr. Lanier testified, that binding was extracellular. Given the testimony of experts for both Chiron and Genentech, no reasonable jury could find by clear and convincing evidence that the parent applications fail to describe or enable binding to the extracellular domain. Accordingly, Chiron is entitled to summary judgment on Genentech's defense that the extracellular domain claims are invalid because the

[13] Fixation with acetone will break open the cell's membrane, allowing antibodies to enter the cell and bind to places other than the extracellular domain.

extracellular domain limitation is not supported by the parent applications.

D. Staining Claims

A number of the claims in the '561 patent pertain to antibodies that exhibit strong stating intensity in an immunoassay with three or less, or one or less, of thirteen normal tissues and five blood cell types identified in the patent. (See '561 Patent, Claims 2, 4, 7, 10-12, 20, 22, 25)(the "staining claims"). Genentech initially asserted that the staining claims are invalid for failing to disclose an operable method for determining when the staining requirement is met. However, Genentech does not now oppose Chiron's summary motion with respect to this issue. Having reviewed the record and the submissions of the parties, the court concludes that summary judgment in Chiron's favor on this issue is appropriate.

E. Utility

Section 112 requires the patentee to disclose not only how to make his invention, but also how to use his invention. The so called "how to use" prong of the enablement requirement incorporates the requirement of section 101 of the Patent Act that the specification disclose a practical utility for the invention. 35 U.S.C. § 101; In re Zeigler, 26 U.S.P.Q. 2d 1600 (Fed. Cir. 1993). If the application fails to disclose the utility of the invention as required by section 101, then as a matter of law it also fails to describe how to use the invention under section 112. Id. Whether the application has disclosed the utility of the invention under section 101 is a question of fact. Id.

"When a properly claimed invention meets at least one stated objective, utility under § 101 is clearly shown." Raytheon Co. v. Roper Corp., 724 F.2d 951, 958 (Fed. Cir. 1983). "An invention need not be the best or the only way to accomplish a certain result, and it need only be useful to some extent and in certain applications. . . ." Stiftung v. Renishaw PLC, 945 F.2d 1173, 1180 (Fed. Cir. 1991); see also Juicy Whip, Inc. v. Orange Bang, Inc., 185 F.3d 1364, 1366 (Fed. Cir. 1999)(the invention need only be "capable of providing some identifiable benefit"). However, the patent must assert an "actual, not merely potential, benefit." Zeigler, 26 U.S.P.Q. 2d at 1604 (internal quotation omitted). Unless a "specific benefit exists in currently available form . . . there is insufficient justification for permitting an applicant to engross what may prove to be a broad field." Cross v. Izuka, 753 F.2d 1040, 1046 (Fed. Cir. 1985)(quoting Brenner v. Manson, 383 U.S. 519, 534-35 (1966)). To establish a non-utility defense, Genentech must prove total incapacity by clear and convincing evidence. Moleculon Research Corp. v. CBS, Inc., 793 F.2d 1261, 1269 (Fed. Cir. 1986).

Genentech argues that the priority applications describe the utility of only a small class of monoclonal antibodies against HER2 – monoclonal antibodies that can be conjugated with a toxin so that they will kill breast cancer cells expressing the HER2 antigen. Therefore, Genentech argues, the priority applications fail to disclose how anti-HER2 antibodies that do not have these properties are useful. Genentech's argument fails as a matter of law, because the law

does not require every application of the invention to be useful. "[T]he fact that an invention has only limited utility and is only operable in certain applications is not grounds for finding lack of utility." Envirotech Corp. v. Al George, Inc., 730 F.2d 753, 762 (Fed. Cir. 1984). If some monoclonal antibodies of the invention are useful as immunotoxins, that is sufficient.

Genentech's argument also reads the parent applications too narrowly. In addition to discussing the therapeutic applications of monoclonal antibodies conjugated to toxins, the parent applications describe how to use monoclonal antibodies in cancer diagnosis and in immunoassays. (See 1984 Application, at 2, 3, 9.) According to Dr. Lanier, a person of ordinary skill in the art in 1984 and 1985 would know that it is not necessary to conjugate an antibody with a toxin in order to use it in an immunoassay or for diagnosis. (Lanier Decl. ¶ 17.) Thus, the utility of anti-HER2 monoclonal antibodies other than toxin-conjugates would have been apparent to a person of ordinary skill from the parent applications. Genentech has presented no expert evidence to the contrary. Therefore, Chiron is entitled to summary judgment that the parent applications meet the utility requirements of sections 101 and 112.[14]

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[14] Because "[p]eople rarely, if ever, appropriate useless inventions," Raytheon Co. v. Roper Corp., 724 F.2d 951, 960 (Fed. Cir. 1983), the Federal Circuit has held that a "finding of infringement of otherwise valid claims mandates as a matter of law a finding of utility under § 101." U.S. Steel, 865 F.2d at 1252. In an order filed concurrently herewith, the court has granted summary judgment to Chiron on its infringement claim. (See Mem. and Order Re: Infringement.) However, because triable issues of fact remain as to whether the claims of the '561 patent are "otherwise valid," a finding of utility is not "mandated" based on the court's finding of infringement. The court

F. Best Mode

Genentech also argues that the parent applications fail to "set forth the best mode contemplated by the inventor of carrying out his invention" as required by section 112. 35 U.S.C. § 112. The best mode requirement "creates a statutory bargained-for exchange by which a patentee obtains the right to exclude others from practicing the claimed invention for a certain time period, and the public receives knowledge of the preferred embodiments for practicing the claimed invention." Eli Lilly & Co. v. Barr Labs, 251 F.3d 955, 962 (Fed. Cir. 2001).

Genentech argues that the priority applications conceal the fact that a cell line known as SKBr-3 is the preferred immunogen[15] to use in generating anti-HER2 monoclonal antibodies. Chiron argues that Genentech's argument fails as a matter of law, because the '561 patent claims monoclonal antibodies, not immunogens or methods of making monoclonal antibodies using immunogens.

It is well settled that "the contours of the best mode requirement are defined by the scope of the invention." Northern Telecom Ltd. v. Samsung Elecs. Co., 215 F.3d 1281, 1286 (Fed. Cir. 2000). Matter that is not claimed in the patent is

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therefore does not rely on Raytheon's reasoning in finding that the patent is not invalid for lack of utility.

[15] An immunogen is a substance capable of provoking an immune response. Using the traditional Kohler and Millstein method for producing monoclonal antibodies, an immunogen would be injected into a mouse or other animal to provoke an immune response. The murine spleen cells would then be harvested and spliced with a myeloma cell. The resulting hybridoma cell line would produce antibodies against an antigen found on the immunogen.

not subject to the best mode requirement. Id. (holding that the failure to disclose the best way to do fine line etching on aluminum in semiconductor devices did not render the patent invalid, where the patent claimed a method of plasma etching).

For example, in Eli Lilly & Co. v. Barr Labs, the Federal Circuit held that a patent for the active ingredient in Prozac, an anti-depressant drug, was valid even though the inventor did not disclose how to make his preferred starting material, a compound called p-trifluoromethylphenol. 251 F.3d 955, 962 (Fed. Cir. 2001). The patent claimed the active ingredient in Prozac, not p-trifluoromethylphenol or a method of making p-trifluouromethylphyenol. In addition, p-trifluoromethylphenol was publicly available, so others could easily acquire it even though the inventor failed to disclose how he made it. The court ruled that the inventor's disclosure that he preferred using p-trifluoromethylphenol was sufficient to satisfy the best mode requirement. Id. Because the inventor's method of making p-trifluoromethylphenol was neither claimed in the invention, nor necessary to its production, the inventor was not obligated under section 112 to disclose how his preferred mode for making the compound. Id. at 963 ("[A]n inventor need not disclose a mode for obtaining unclaimed subject matter unless the subject matter is novel and essential for carrying out the best mode of the invention").

This case is different from Barr Labs. The subject matter claimed in the '561 patent is a monoclonal antibody that binds to the HER2 antigen. Genentech's argument is not that the inventors failed to disclose the best way to make the unclaimed

immunogen, but that they failed to disclose the best way to make the claimed monoclonal antibodies. This is precisely what section 112 requires. "If . . . the applicant develops specific instrumentalities or techniques which are recognized at the time of filing as the best way of carrying out the invention, then the best mode requirement imposes an obligation to disclose that information to the public as well." Spectra-Physics, Inc. v. Coherent, Inc., 827 F.2d 1524, 1532 (Fed. Cir. 1987)(finding a patent on an ion laser invalid for failing to disclose the best way known to the inventor of welding the components of the laser together). Accordingly, the court turns to the merits of Genentech's best mode defense.

Determining whether a patent meets the best mode requirement involves two factual inquiries. Fonar Corp. v. General Elec. Corp., 107 F.3d 1543, 1548 (Fed. Cir. 1997). First, the fact-finder must determine whether at the time the patentee filed the application he or she had a best mode for practicing the invention. Id. This is a subjective inquiry, which focuses on the inventor's state of mind at the time of filing. Id. Second, if the inventor had a preferred mode for practicing the invention, the fact-finder must determine whether the best mode was disclosed in sufficient detail to allow one skilled in the art to practice it. Id. This is an objective determination, which examines the scope of the claimed invention and the level of skill in the art. Id. Genentech must present clear and convincing evidence on both prongs to prevail on a best mode defense. Barr Labs, 251 F.3d at 962.

Under the first prong of the defense, Genentech must

show that Drs. Ring and Frankel subjectively possessed a best mode for practicing the invention. The only evidence Genentech presents to support such a finding is that Drs. Ring and Frankel used SKBr-3 to produce their first anti-HER2 monoclonal antibodies, and that they had immediate success using SKBr-3. (Frankel Dep. at 49, 218-19.) This evidence merely suggests that SKBr-3 is one way to make the monoclonal antibodies of the invention. The record reflects that Drs. Ring and Frankel produced monoclonal antibodies that bind to HER2 using immunogens other than SKBr-3. (Crotty Decl. Ex. 12.) When asked at their respective depositions whether they preferred SKBr-3 as an immunogen, both Drs. Ring and Frankel answered in the negative. (Ring Dep. at 82-83; Frankel Dep. at 122-23.)

Moreover, it is undisputed that the monoclonal antibodies of the invention can easily be generated using the hybridomas on deposit. As Dr. Frankel testified at his deposition, he did not feel it necessary to identify any particular cell line as an immunogen in the patent because "all of these antibodies were deposited with the American Type Culture Collection so literally in a week and a half you could be producing the antibody, make a column to pull out the antigen if you wanted and you know which cell lines to use to get it." (Frankel Dep. at 219-220.) Thus, the undisputed facts suggest that, if anything, the deposited hybridomas were what the inventors subjectively preferred for making the monoclonal antibodies of the invention.

Because Genentech has a clear and convincing burden of proof at trial, Genentech's evidence must do more than simply

raise some doubt regarding the best mode requirement. See Johns Hopkins, 152 F.3d 1342, 1359. "If the evidence is merely colorable, or is not significantly probative, summary judgment may be granted." Id. (quoting Anderson, 477 U.S. at 249-50). Genentech has not come forward with even colorable evidence that Drs. Ring and Frankel subjectively believed SKBr-3 to be the best way to practice their invention. Because Genentech bears the burden of proving each element of a best mode defense by clear and convincing evidence, Chiron is entitled to summary judgment that the best mode requirement was met.

G. 35 U.S.C. § 135(b)

Finally, Genentech argues that claim 19 of '561 patent, which covers a "monoclonal antibody that binds to human c-erbB-2 antigen," is invalid under section 135(b) of the Patent Act because it was filed more than one year after Genentech filed a patent claiming the same subject matter.

Section 135(b) has no application to this case. Under Section 135(b), "[a] claim which is the same as, or for the same or substantially the same subject matter as, a claim of an issued patent may not be made in any application unless such a claim is made prior to one year from the date on which the patent was granted." 35 U.S.C. § 135(b). Section 135(b) appears in a section of the Patent Act discussing interference proceedings, which are instituted in the PTO when a person submits a patent application that might "interfere" with someone else's pending patent application or unexpired patent. Section 135(b) acts as a statute of limitations by placing a one year time limit on when a patent applicant can copy the claims of another inventor's patent

in order to provoke an interference. Berman v. Housey, 2002 WL 1068293, No. 01-1311, at *5 (Fed. Cir. May 29, 2002). It is a procedural bar to interference proceedings, not a substantive basis upon which to declare the claims of a patent invalid. See 35 U.S.C. § 282 (listing defenses available in a patent infringement suit).[16]

H. Conclusion

Chiron is entitled to summary judgment on some, but not all of Genentech's invalidity defenses under sections 112 and 101. Because disputed issues of material fact exist as to whether the parent applications meet the written description and enablement requirements of section 112, however, neither party is entitled to summary judgment regarding the priority date of the '561 patent. Consequently, neither party is entitled to summary judgment on Genentech's defense and counterclaim that post-1984/1985 art anticipates the '561 patent.

IT IS THEREFORE ORDERED THAT:

(1) Summary judgment be, and the same hereby is, DENIED to both parties on Genentech's defense and counterclaim that the '561 patent is invalid as anticipated by prior art because the parent applications fail to meet the enablement requirement;

(2) Summary judgment be, and the same hereby is, DENIED to both parties on Genentech's defense and counterclaim that

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[16] Not only does this "defense" lack merit, it was not pled in Genentech's answer as required by the Patent Act and Rule 8 of the Federal Rules of Civil Procedure, see 35 U.S.C. § 282; Fed. R. Civ. Proc. 8(c), and was raised for the first time in Genentech's opposition to Chiron's motion for summary judgment.

the '561 patent is invalid as anticipated by prior art because the parent applications fail to meet the written description requirement;

(3) Summary judgment be, and the same hereby is, GRANTED to Chiron on Genentech's defense and counterclaim that the extra cellular domain claims are invalid for failure to describe or enable binding to the extracellular domain;

(4) Summary judgment be, and the same hereby is, GRANTED to Chiron on Genentech's defense and counterclaim that the staining claims are invalid for failure to disclose an operable immunoassay;

(5) Summary judgment be, and the same hereby is, GRANTED to Chiron on Genentech's defense and counterclaim of invalidity for lack of utility under sections 112 and 101;

(6) Summary judgment be, and the same hereby is, GRANTED to Chiron on Genentech's defense and counterclaim of invalidity for failure to meet the best mode requirement.

DATED: June 24, 2002

WILLIAM B. SHUBB
UNITED STATES DISTRICT JUDGE